

### THE QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE

THE January number of this well-known scientific periodical appears in so new a form as to call for special notice. Under the editorship of Prof. R. Lankester it has long since attained a very high standpoint among the high-class journals of Europe, but it wanted a little in its general get-up to bring it to the very highest level of these, in such details as size, paper, and illustrations. No doubt such details are not to be taken for more than they are worth, and of late years it will be conceded by all those whose opinion is worth having that the value of the contents of the quarterly numbers of the journal left it in a great measure independent of mere typographical superfluities. Still it is very pleasant to find this eighty-ninth number of the New Series so splendidly got up—its paper and type are such as we might expect to find associated with some special monograph; while the increased size (royal octavo) enables the illustrations to be given on a scale quite up to anything we have been accustomed to in the very first of the German and French journals. Let us hope that the enterprise of both Editor and Publisher will meet with sufficient reward to enable them to continue to show what can be done in the way of a scientific journal in these countries.

That the contents are worthy of such a shrine is beyond dispute. Never has Prof. Lankester issued a more important number of his journal, as a mere enumeration of the contents as follows will show. Dr. E. Klein, On the relation of Pathogenic to Septic Bacteria, as illustrated by Anthrax cultivations. This paper relates to a most serious question: it is a model of fair and judicious criticism of the labours of others, and of skill in experimental details. Our space forbids an allusion to its conclusions; but every medical man of any culture should read and re-read this memoir. Somewhere Claude Bernard has said, "Nowadays every medical man *thinks* himself a physiologist." Such would profit by a perusal of this paper if they are able to understand its full significance.—E. B. Poulton, M.A., On the tongue of *Perameles nasuta*, with some suggestions as to the origin of taste-bulbs (Plate 1).—Dr. L. Elsberg, Plant-cells and living matter.—F. O. Bower, M.A., Plasmolysis and its bearing upon the relations of cell-wall and protoplasm (Plate 8).—Prof. A. P. Thomas, The life-history of the Liver Fluke (*Fasciola hepatica*), (Plates 2 and 3); a most elaborate, complete, and beautifully illustrated monograph.—W. F. R. Weldon, B.A., Note on the early development of *Lacerta muralis* (Plates 4-6).—R. V. Willemoes-Suhm (the late), On a crustaceous larva, at one time supposed to be the larva of *Limulus* (Plate 7).—A. G. Bourne, B.Sc., On Haplobranchus, a new genus of Capitobranchiate annelids (Plate 9).—E. Ray Lankester, M.A., and A. G. Bourne, B.Sc., The minute structure of the lateral and the central eyes of Scorpio and of *Limulus* (Plates 10-12). The authors find, in the essential agreement of the central eyes of *Limulus* with those of Scorpions, another important detail, which confirms the opinion of Prof. Lankester, that the Scorpions and King Crabs are closely-allied representatives of one class, the Arachnida.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—Dr. E. B. Tylor's first lecture on Anthropology will take place on Thursday, February 15, at 2.30 p.m., at the large lecture room at the University Museum, not on Wednesday, the 14th, as previously announced. The second lecture will be given at the same hour and place on Wednesday, the 21st.

The voting for "elected members" of the new Boards of Faculties took place last Saturday. The electors were the Members of Convocation, authorised by the Colleges to teach in the subjects of the various faculties. Mathematics and Natural Science are included in one faculty—that of Natural Science. As there are more college lecturers in Mathematics than in Natural Science, it was resolved at a preliminary meeting of the electors to choose five mathematicians and five teachers of Natural Science to occupy the ten places which were to be filled up. Ten names were then agreed upon, but at the formal meeting another mathematician and another scientist were proposed so that it became necessary to vote. The ten names before agreed upon were those chosen, the mathematicians naturally heading the list. They are Messrs. W. Esson, F.R.S., Merton, C. J. Faulkner, University, C. Leudesdorf, Pem-

broke, E. B. Elliott, Queen's, and J. W. Russell, Balliol, as representatives of mathematics; Messrs. R. E. Baynes, Christ Church, as a representative of Physics; Messrs. J. Watts, Merton, and A. G. Vernon Harcourt, F.R.S., Christ Church, as representatives of Chemistry; and Messrs. E. B. Poulton, Keble, and W. H. Jackson, New, as representatives of Biology.

The Professors of Mathematics and Natural Science are *ex officio* members of the Board.

The Examiners for the Radcliffe Travelling Fellowship give notice that the examination will commence at the Museum on February 13.

The Examiners for the Burdett-Coutts Geological Scholarship give notice that the examination will commence on February 12.

The serious illness of Prof. Henry J. S. Smith is causing much anxiety in the University.

CAMBRIDGE.—The syndicate appointed to frame regulations on the subject of the degree of Doctor in Science or Letters report that they think it important that precautions should be taken to secure that whenever a degree in Science or Letters is granted, the provisions of the statute requiring that the candidate shall have given proof of distinction by some original contribution to the advancement of science or learning have been *bona fide* complied with; but they think it undesirable to require from candidates any additional examination or special act or exercise. Considering that it is desirable to encourage the more distinguished graduates to turn their thoughts towards original work at a comparatively early age, and that it is not uncommon for able men to be elected Fellows of the Royal Society at the age of thirty or thereabouts, the Syndicate are of opinion that five years will be a sufficient interval between the degrees of M.A. and D.S. or D.L. The Syndicate think that it is to be wished that some of the older graduates in Arts should proceed to their new degrees. They think that the probability of this would be increased if the seniority of all those who so proceed within a limited time were reserved to them. The Syndicate have carefully considered the difficulty which may arise from the ambiguity of the term "Science." They are of opinion that no regulations can be laid down drawing a clear line between claims for a degree in Science and claims for a degree in Letters.

The Syndicate have drawn up a code of regulations to the effect of the above. The fee to be payable for the degree of either Doctor of Science or Letters to be 20*l*.

Candidates' applications are to be sent to the Chairman of the Special Board of Studies with which their original contribution is most closely connected, specifying the printed contribution or contributions for which the degree is sought. The application is to be considered by a committee, and the contributions reported on by at least two persons, who may be members of the committee or not. If the Special Board report in favour of the candidate, the General Board of Studies is to have a voice in the matter, and if they approve, the Vice-Chancellor is to publish the name as approved.

The following are nominated Electors to the Professorships named:—

Chemistry.—Professors A. W. Williamson, Lord Rayleigh, Dewar, Frankland; Doctors Phear (Emmanuel College), and Ferrers (Caius), Prof. Fuller (of Aberdeen), and Mr. Coutts Trotter.

Jacksonian of Natural Philosophy.—Professors A. W. Williamson, G. G. Stokes, G. D. Liveing, Dr. Hugo Müller, F.R.S., Dr. M. Foster, Mr. P. T. Main, Prof. Fuller (Aberdeen), and Mr. Coutts Trotter.

Cavendish of Experimental Physics.—Sir W. R. Grove, Prof. G. G. Stokes, G. H. Darwin, Sir W. Thomson, R. B. Clifton, G. D. Liveing, James Stuart, and Mr. W. D. Niven.

The Smith's Mathematical Prizes are awarded to Messrs. Welsh, Jesus College (1), and Turner, Trinity College (2).

The Balfour Fund now amounts to about 4130*l*., in addition to the 4000*l*. contributed by his relatives and by Dr. Foster.

DURING last year there entered at the University of Upsala 330 students. In 1881, the number was 312; in 1880, 263; in 1879, 259; in 1878, 243.

### SCIENTIFIC SERIALS

*Journal de Physique*, January, 1883.—On the metallic gratings of Mr. Rowland, by M. Mascart.—*Résumé* of experiments made at the Exhibition of Electricity, on magneto- and dynamo-

electric machines, and on electric lights, by M. Potier.—On electric shadows and on various connected phenomena, by M. Righi.—On the surface of the wave, by M. Doyen.—Demonstration of the principle of Archimedes for bodies immersed in various gases, by M. Terquem.

*Atti della R. Accademia dei Lincei. Transunti.* Vol. xvii., fasc. 1.—On attenuation of the carbuncular virus, by S. Perroncito.—On the tenacity of the carbuncular virus in its forms of spores, or of *Bacillus anthracis*, by the same.—On the presence of yttrium in the sphene of syenite of Biellese, by S. Cossa.—New Sicilian fungi, by Srs. Passerini and Beltiami.—On some unpublished propositions of Fermat, by M. Henry.—On the action of chloride of cyanogen on the potassic compound of pyroly, by Srs. Ciamician, and Dennstedt.

Vol. xvii. Fasc. 2.—On a class of triple systems of orthogonal surface, by S. Bianchi.—Observations of the Venus transit at the Observatory of Campidoglio, by S. Respighi.—Reports on prize competitions.

*Reale Istituto Lombardo di Scienze e Lettere. Rendiconti.* Vol. xv. Fasc. xvii.—On compensatory hypertrophy of the kidneys, by S. Golgi.—On drunkenness in Milan (continued), by S. Verga.

Fasc. xix.—Prof. Giacci's "Fundamental theorem in the theory of the canonical equations of motion," by S. Morera.—On drunkenness in Milan (continued), by S. Verga.—On oliv and some of its transformations, by Srs. Körner and Carnelutti.—Congenital pachydactylia from a psychical impression in the mother, by S. Scarenzio.—Observation of the transit of Venus at the Royal Observatory of Brera, on December 6, 1881, by S. Schiaparelli.—Bacteria of anthrax in the fetus of a heifer that died of the disease, by S. Sangalli. Discussion with S. Golgi.

## SOCIETIES AND ACADEMIES

### LONDON

**Royal Society, February 1.**—"On the Affinities of Thylacoleo," by Prof. Owen, C.B., F.R.S., &c.—Since the appearance of Part IV. of the "Fossil Mammals of Australia" in the *Philosophical Transactions* for 1871, the author has omitted no opportunity of promoting the acquisition of additional evidences. The application of a grant by the Legislature of New South Wales, in aid of further exploration of the Limestone Caverns in Wellington Valley, having been confided to Ed. P. Ramsay, F.L.S., the results have furnished the author with additional evidences, including those which form the subject of the present communication. After a brief exposition of the state of the question at the date of the previous paper, a description is given of the complete dentition of the upper and lower jaws of a mature marsupial lion. This is followed by descriptions of the antibrachial bones and ungual phalanges of the same extinct animal, the characters of those parts of the skeleton being compared with the same parts in feline mammals and in the existing kinds of diprotodont marsupials. The paper concludes with a description of an entire mandible; and the conclusions to be drawn from the shape and position of the articular condyles, which harmonise with those deducible from fragmentary fossils previously described, go nearly to complete the reconstruction of what the author deems to be the most extraordinary of the extinct pouched quadrupeds of Australia.

The paper was accompanied by drawings of the natural size of the fossils described.

In the subsequent discussion the author remarked on the correspondence of spælean phenomena, the proportion of the remains of the old British lion in bone caves of this country being paralleled by that of the Australian carnivore in the antipodean caves. They were the retreat of the destroyer in both localities; and the fragmentary, gnawed condition of the remains of the prey, with usual immaturity of the captured kangaroos of great size, the *Diprotodon australis*, e.g., afforded an instructive analogy.

"Preliminary Note on a Theory of Magnetism based upon New Experimental Researches." By Prof. D. E. Hughes, F.R.S.

In the year 1879 (*Proc. Roy. Soc.*, vol. xxix. p. 56, 1879) I communicated to the Royal Society a paper "On an Induction Currents Balance and Experimental Researches made therewith." I continued my researches into the molecular construction of metallic bodies, and communicated the results then obtained in three separate papers (*Proc. Roy. Soc.*, vol. xxxi. p. 525; vol. xxxii. pp. 25, 213, 1881) bearing upon molecular magnetism.

To investigate the molecular construction of magnets, required again special forms of apparatus, and I have since been engaged upon these, and the researches which they have enabled me to follow.

From numerous researches I have gradually formed a theory of magnetism entirely based upon experimental results, and these have led me to the following conclusions:—

1. That each molecule of a piece of iron, steel, or other magnetic metal is a separate and independent magnet, having its two poles and distribution of magnetic polarity exactly the same as its total evident magnetism when noticed upon a steel bar-magnet.

2. That each molecule, or its polarity, can be rotated in either direction upon its axis by torsion, stress, or by physical forces, such as magnetism and electricity.

3. That the inherent polarity or magnetism of each molecule is a constant quantity like gravity; that it can neither be augmented nor destroyed.

4. That when we have external neutrality, or no apparent magnetism, the molecules, or their polarities, arrange themselves so as to satisfy their mutual attraction by the shortest path, and thus form a complete closed circuit of attraction.

5. That when magnetism becomes evident, the molecules or their polarities have all rotated symmetrically in a given direction, producing a north pole if rotated in this direction as regards the piece of steel, or a south pole if rotated in the opposite direction. Also, that in evident magnetism, we have still a symmetrical arrangement, but one whose circles of attraction are not completed except through an external armature joining both poles.

The experimental evidences of the above theory are extremely numerous, and appear so conclusive, that I have ventured upon formulating the results in the above theory.

I hope in a few weeks to bring before the Royal Society the experimental evidence which has led me to the conclusions I have named; conclusions which have not been arrived at hastily, but from a long series of research upon the molecular construction of magnetism now extending over several years.

**Linnean Society, January 18.**—Sir John Lubbock, Bart., F.R.S., president, in the chair.—E. A. L. Batters, A. J. Burrows, E. F. Cooper, Prof. J. A. Harker, and G. Lewis, were elected Fellows of the Society.—Mr. H. Grooves called attention to a specimen of *Ranunculus ophioglossifolius* obtained in Hampshire, and therefore new to Britain.—There was exhibited, on behalf of Mr. Jas. Romanis, a live specimen of *Pieris Rapæ*, which had been found fluttering on the window of his house a few days previously.—A paper was read on the fall of branchlets in the aspen (*Populus tremula*) by Samuel G. Shattock. He shows that in this tree and some few others—in contradiction to the majority of exogenous trees—a process takes place termed "cladotopsis" by the Rev. M. J. Berkeley many years ago. In the small branchlets only disarticulation is effected by a swollen ring of corky tissue at the base, somewhat as in the ordinary fall of leaves.—Mr. A. G. Bourne gave a contribution on the anatomy of Polynoina, pointing out that the *Polynoa grubiana*, very common in the Mediterranean, is only a variety of the *P. clava*, Montague, of our own coasts. The latter itself has certain constant characteristics, and others much more variable.—Prof. P. Martin Duncan read his observations on the Madreporaria, fam. Fungidae, with special reference to the hard structures. Edwards and Haime described the synaptacula as constituting an essential family structure, and also the absence of endothecal dissepiments. Dr. Duncan describes that the ridges of the continuous synaptacula with canals between them is limited by solid and also perforate septa, and he delineates the structures. The synaptacula are shown to have no relation to the ornamentation on the ridges of the septa. The basal wall is shown to be of synaptacular origin, and the foramina in it to relate to the growth of these binding structures.

**Physical Society, January 27.**—Prof. Clifton, president, in the chair.—Hugh E. Harrison.—Prof. G. Carey Foster read a paper on the determination of the ohm, in which he described the various methods which have been used and proposed in determining the B.A. unit of resistance. He also described a method of his own, proposed in 1874, and recently tried with good results. The method consists in balancing the E.M.F. set up in a coil of wire by spinning it in the earth's magnetic field, against the E.M.F. of a battery or